

TOWARDS AN ECOLOGICALLY AND ECONOMICALLY SOUND BIOFOULING CONTROL OF *MYTILOPSIS LEUCOPHAEATA* IN THE HARBOUR OF ANTWERP

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Any surface exposed to untreated water provides an opportunity for the settlement and subsequent growth of filter feeders. The cooling water conduits of a power station are an ideal habitat for such species, because they pump untreated water from nearby seas, rivers and lakes. Settlement occurs readily and growth can be rapid until it begins to interfere with the operational systems and finally leads to their failure. This phenomenon is known as biofouling. Because of the great economical damage, caused by fouling organisms, biocides are being used to control them. Until now, the most effective and cheap control measure is chlorination. Regardless of its non-specific toxicity, chlorine-holding chemicals are used worldwide.

Mytilopsis leucophaeata, the Brackish Water Mussel, is a typical estuarine species that invaded Europe in the 19th century and originates from the US. But it is only since the early nineties that the magnitude of fouling problems caused by *M. leucophaeata* in the harbour of Antwerp, became clear. Because of the future legal limitations on biocide draining in cooling water, the use of merely chlorine will no longer be effective enough. Other methods have to be searched to prevent fouling problems, caused by *M. leucophaeata*.

Adult mussels can shut their protective shell valves and stop byssus production to isolate their body from changes in the external environment, such as biocide-passage. The planktonic larvae are the only vulnerable life stages and thus susceptible to biocides. Hence, knowledge on the population dynamics of *M. leucophaeata* provides an ecologically and economically proper use of the detrimental chemicals and minimizes as such their harm in the environment and in the cooling water conduits.

A model, integrating all results of the study, will allow to (1) achieve an efficient and rational use of biocides to control biofouling caused by *M. leucophaeata* and (2) if possible, reduce the recruitment success of *M. leucophaeata* by manipulation of the relevant environmental factors of the incoming cooling water.